

NPIM_HA Series

Hot Press Carbonyl Molded Power Inductors



FEATURES

- SHIELDED POWER INDUCTOR
- LOW PROFILE (2.1 ~ 3.0mm MAX. HEIGHT)
- SURFACE MOUNTABLE CONSTRUCTION
- INDUCTANCE VALUES UP TO 22 μ H
- TAPED AND REELED FOR AUTOMATIC INSERTION

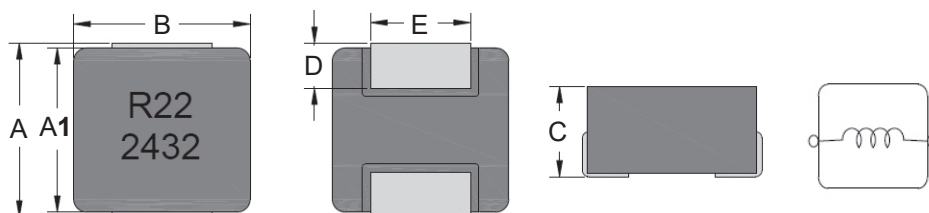
CHARACTERISTICS

Case Size	NPIM42HA	NPIM53HA	NPIM72HA	NPIM73HA
Inductance Range	0.1 μ H ~ 15 μ H	0.24 μ H ~ 22 μ H	0.20 μ H ~ 10 μ H	0.22 μ H ~ 10 μ H
Temperature Range	-40°C ~ +125°C (Ambient + Self Heating)			
Temperature Rise at Irms	+40°C max.			
Inductance Change at Isat	- 30% max.			
Inductance Tolerance	±20% (M)			
Resistance to Solder Heat	260°C for 10 seconds			



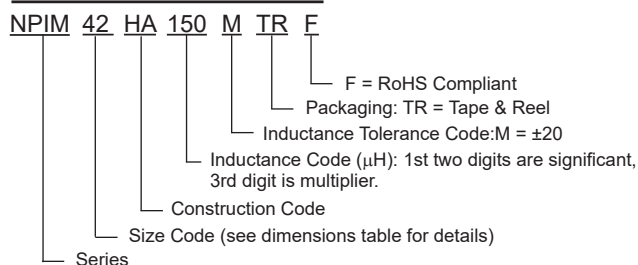
DIMENSIONS (mm)

Case Size	A	A1	B	C	D	E
NPIM42HA	4.3 ± 0.3	4.1 ± 0.3	4.2 ± 0.2	1.9 ± 0.2	0.8 ± 0.3	3.0 ± 0.2
NPIM53HA	5.7 ± 0.3	5.2 ± 0.3	5.3 ± 0.2	2.8 ± 0.2	1.2 ± 0.3	3.0 ± 0.3
NPIM72HA	7.3 ± 0.3	6.7 ± 0.3	6.6 ± 0.3	2.2 ± 0.2	1.8 ± 0.3	3.0 ± 0.2
NPIM73HA	7.3 ± 0.3	6.7 ± 0.3	6.6 ± 0.3	2.8 ± 0.2	1.8 ± 0.3	3.0 ± 0.2



Note: Marking shown above is consistent for all case sizes except NPIM42HA which has value marking only.

PART NUMBER SYSTEM

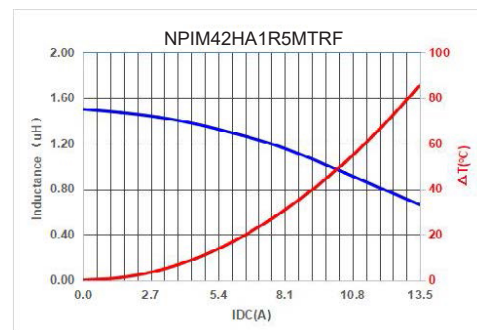
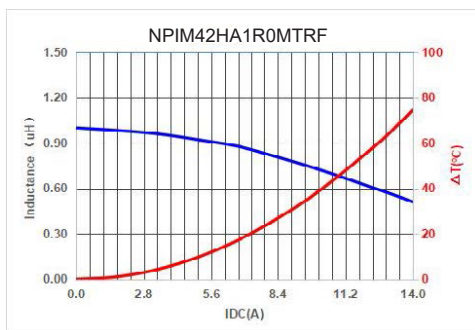
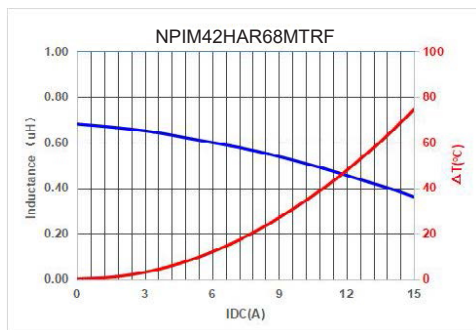
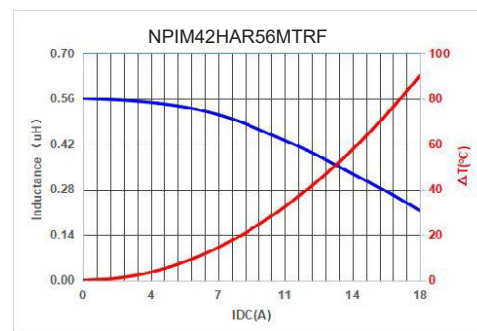
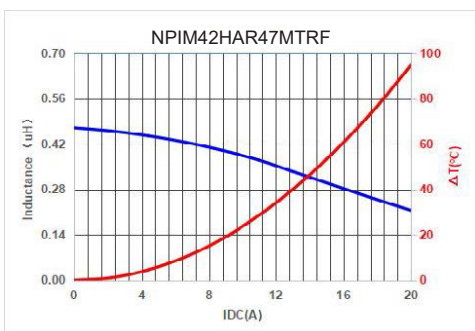
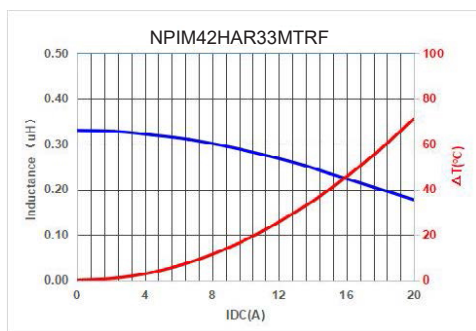
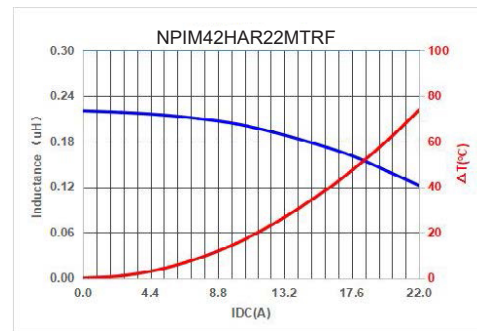
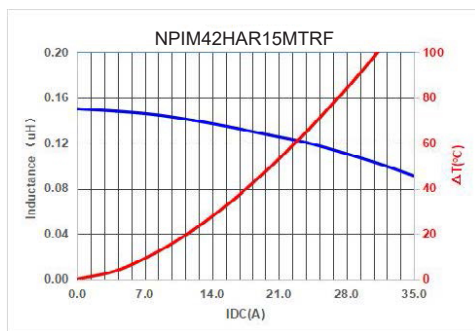
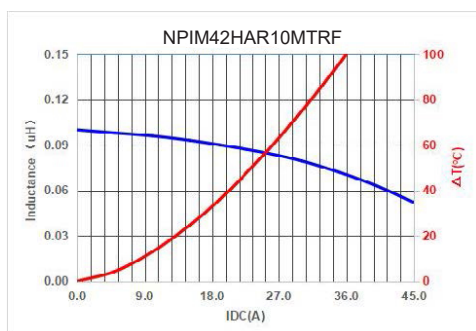


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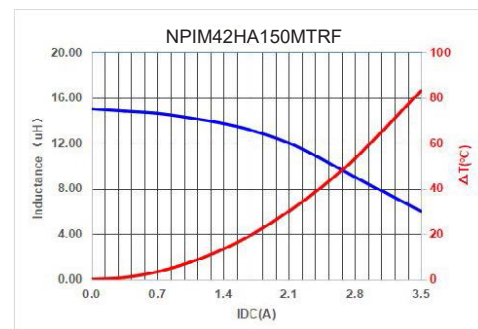
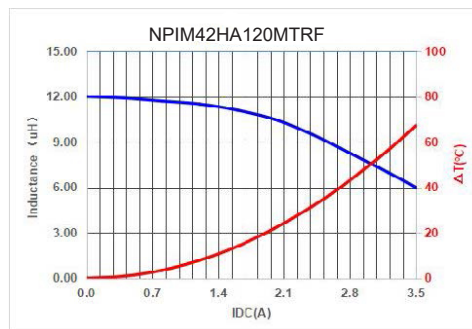
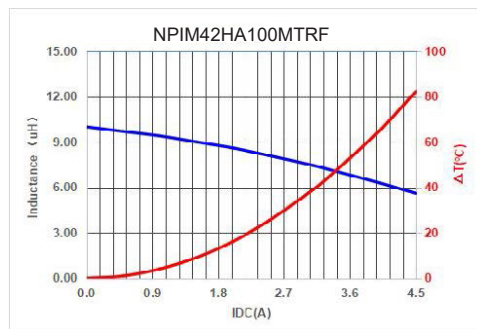
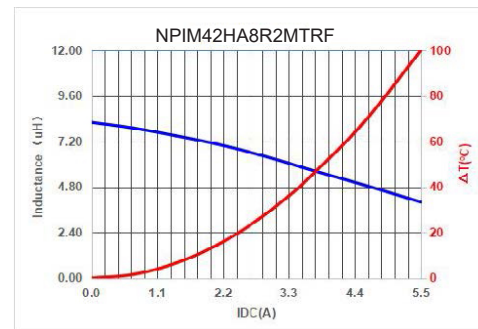
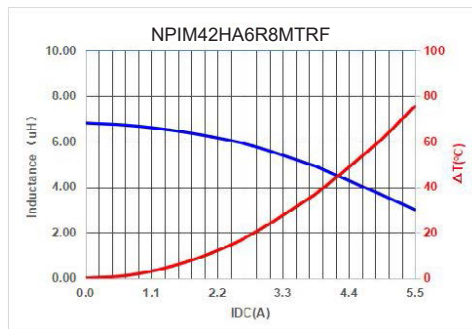
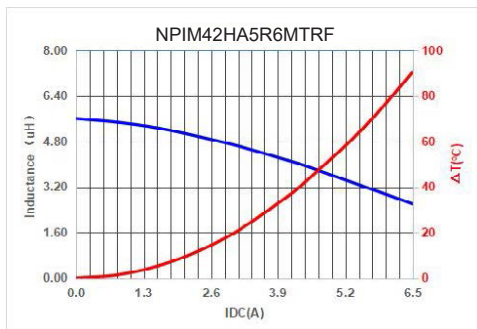
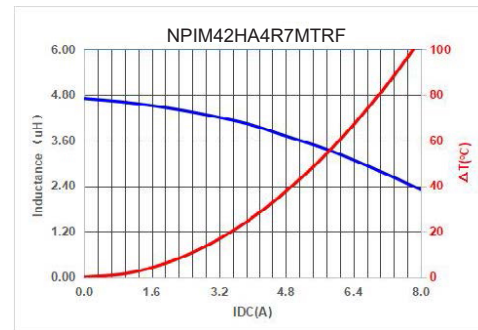
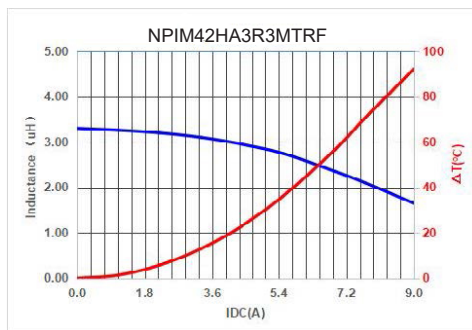
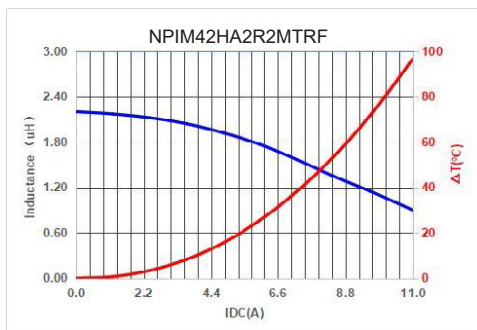
Part Number	Standard Values - NPIM42HA Size (4.3 x 4.2 x 1.9mm)					Test Frequency
	Inductance Value (μH) @ 1MHz	Value Tolerance	DC Resistance (Ω) ±20%	DC Current Isat (Amps max.)	DC Current Irms (Amps max.)	
NPIM42HAR10MTRF	0.10	± 30%	0.0019	32.0	18.0	100KHz
NPIM42HAR15MTRF	0.15	± 20%	0.0031	26.0	15.0	
NPIM42HAR22MTRF	0.22	± 20%	0.0033	16.0	14.0	
NPIM42HAR33MTRF	0.33	± 20%	0.005	13.0	13.0	
NPIM42HAR47MTRF	0.47	± 20%	0.006	11.0	11.0	
NPIM42HAR56MTRF	0.56	± 20%	0.0068	10.5	10.5	
NPIM42HAR68MTRF	0.68	± 20%	0.0082	10.0	10.0	
NPIM42HA1R0MTRF	1.0	± 20%	0.0115	9.5	9.5	
NPIM42HA1R5MTRF	1.5	± 20%	0.0154	8.0	8.0	
NPIM42HA2R2MTRF	2.2	± 20%	0.025	6.5	6.5	
NPIM42HA3R3MTRF	3.3	± 20%	0.041	6.2	5.0	
NPIM42HA4R7MTRF	4.7	± 20%	0.060	5.2	4.1	
NPIM42HA5R6MTRF	5.6	± 20%	0.068	3.7	3.5	
NPIM42HA6R8MTRF	6.8	± 20%	0.0805	3.4	3.3	
NPIM42HA8R2MTRF	8.2	± 20%	0.105	3.1	3.0	
NPIM42HA100MTRF	10	± 20%	0.126	3.0	2.9	
NPIM42HA120MTRF	12	± 20%	0.140	2.4	2.4	
NPIM42HA150MTRF	15	± 20%	0.165	2.1	2.1	



Performance Passives By Design

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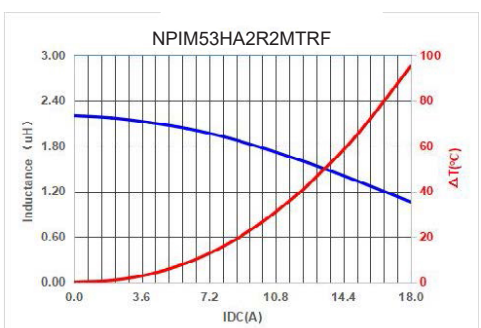
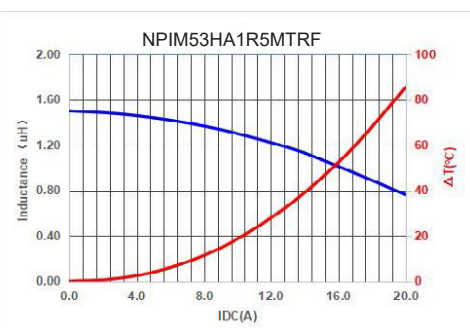
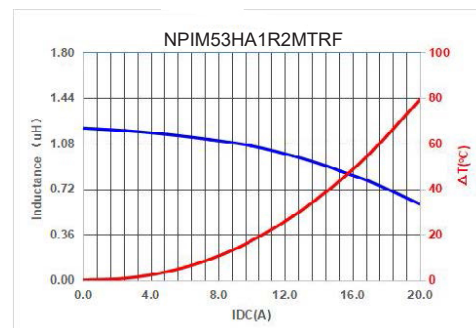
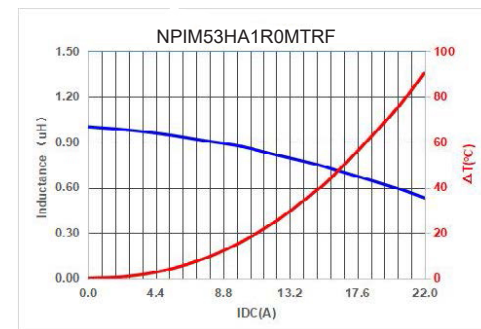
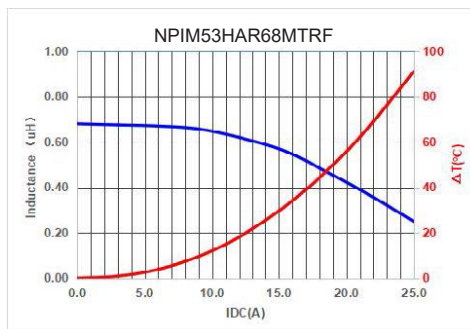
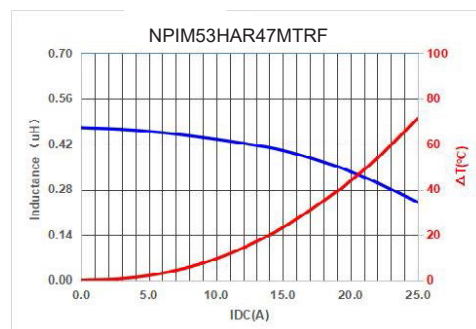
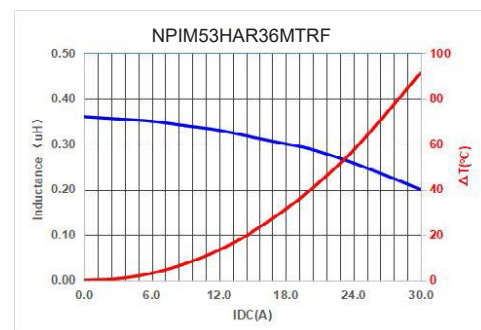
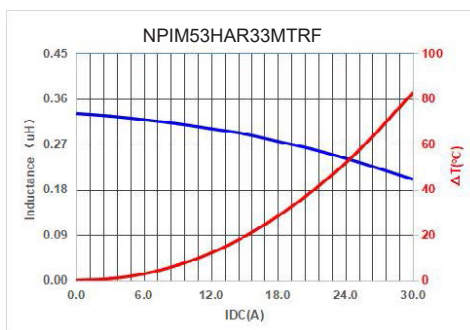
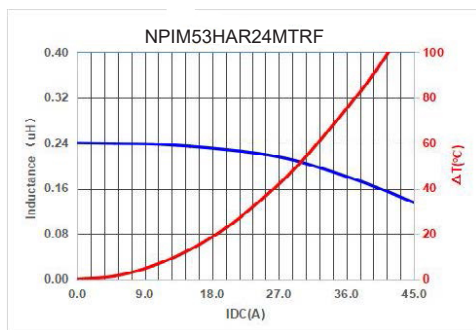


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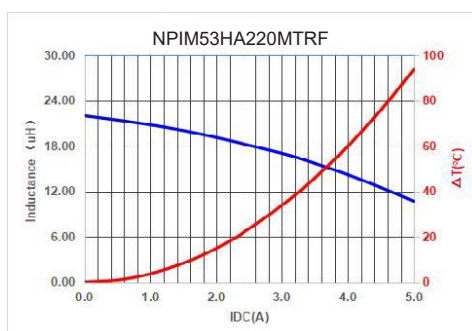
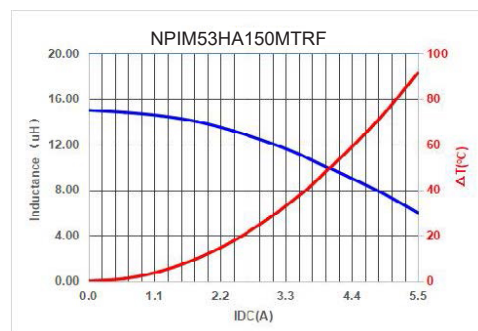
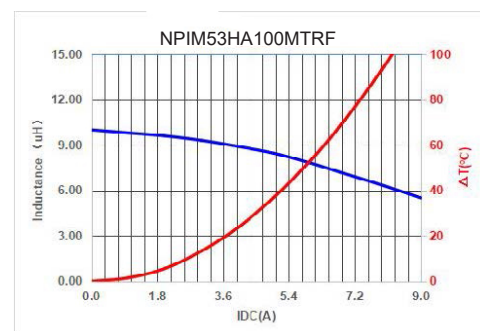
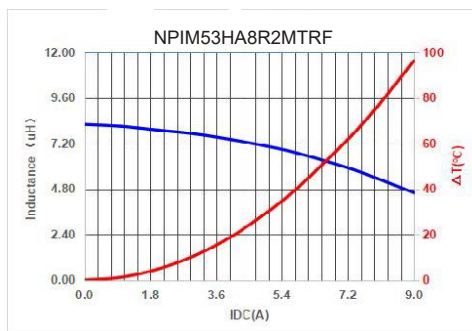
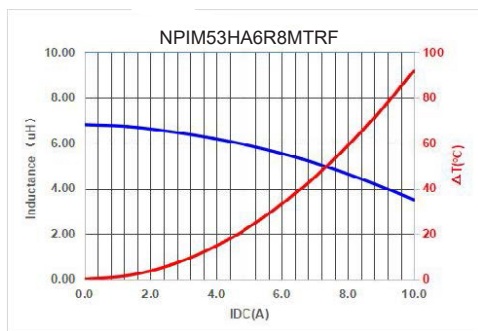
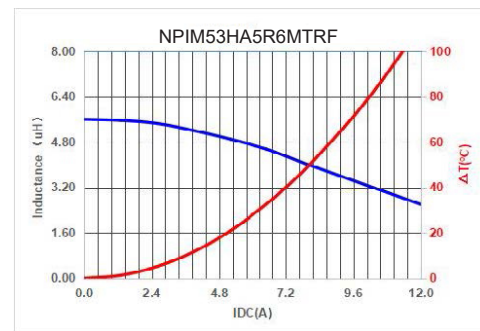
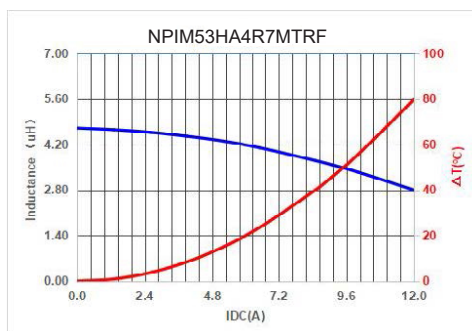
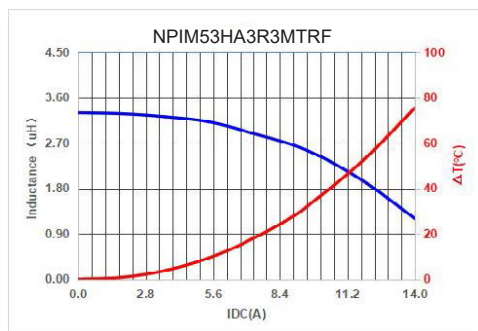
Part Number	Standard Values - NPIM53HA Size (5.7 x 5.3 x 2.8mm)					
	Inductance Value (μH) @ 1MHz	Value Tolerance	DC Resistance (Ω) ±20%	DC Current Isat (Amps max.)	DC Current Irms (Amps max.)	Test Frequency
NPIM53HAR24MTRF	0.24	± 20%	0.003	33.0	22.5	100KHz
NPIM53HAR33MTRF	0.33	± 20%	0.0034	22.0	19.0	
NPIM53HAR36MTRF	0.36	± 20%	0.0035	21.0	18.0	
NPIM53HAR47MTRF	0.47	± 20%	0.0039	17.0	17.0	
NPIM53HAR68MTRF	0.68	± 20%	0.0052	15.0	15.0	
NPIM53HA1R0MTRF	1.0	± 20%	0.0067	13.5	13.0	
NPIM53HA1R2MTRF	1.2	± 20%	0.0084	13.3	12.7	
NPIM53HA1R5MTRF	1.5	± 20%	0.010	13.0	12.5	
NPIM53HA2R2MTRF	2.2	± 20%	0.0144	11.0	10.5	
NPIM53HA3R3MTRF	3.3	± 20%	0.021	9.0	9.0	
NPIM53HA4R7MTRF	4.7	± 20%	0.0324	8.6	7.0	
NPIM53HA5R6MTRF	5.6	± 20%	0.0444	7.2	6.5	
NPIM53HA6R8MTRF	6.8	± 20%	0.050	6.7	6.0	
NPIM53HA8R2MTRF	8.2	± 20%	0.0624	6.4	5.2	
NPIM53HA100MTRF	10	± 20%	0.078	6.0	4.5	
NPIM53HA150MTRF	15	± 20%	0.118	3.2	3.0	
NPIM53HA220MTRF	22	± 20%	0.160	3.1	2.7	



Performance Passives By Design

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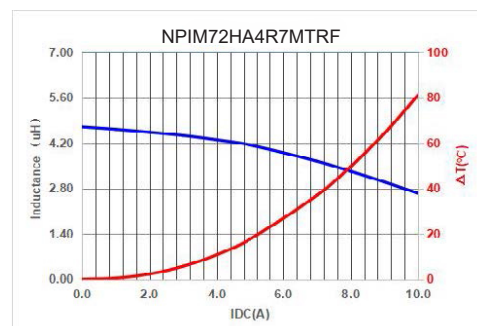
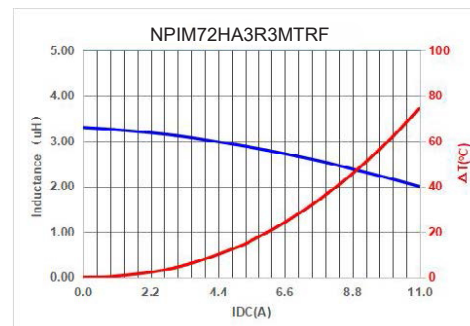
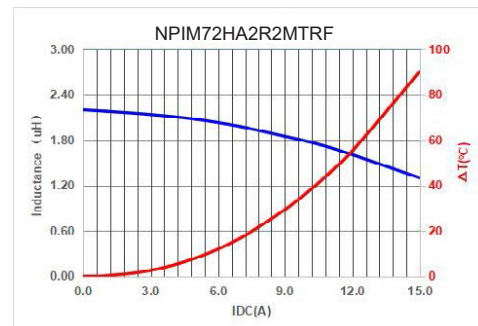
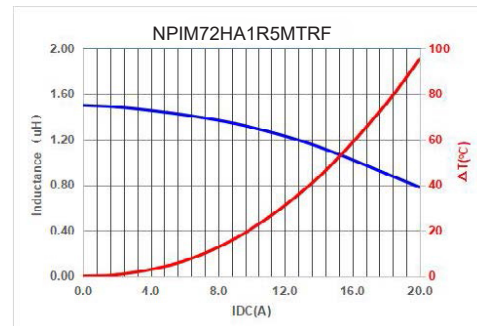
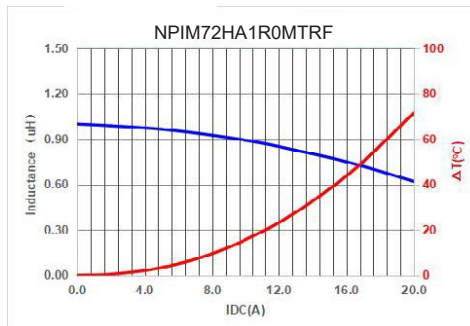
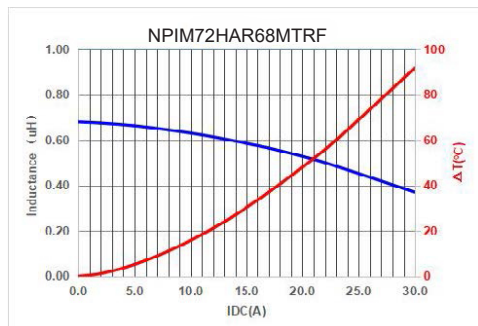
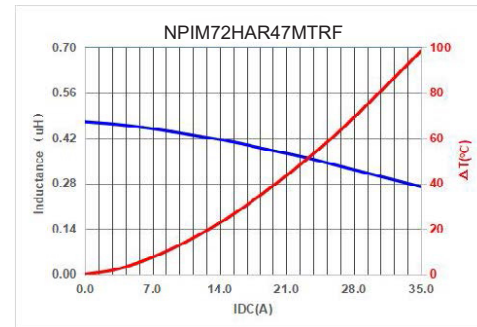
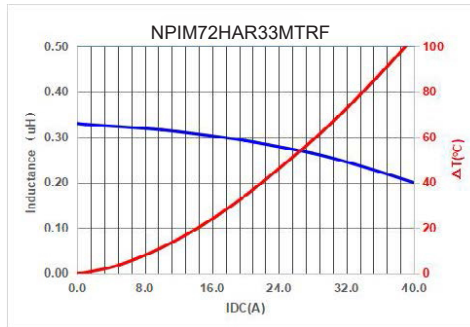
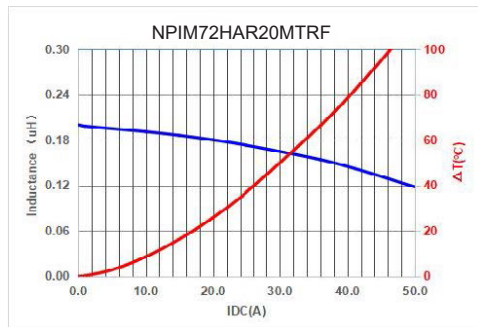


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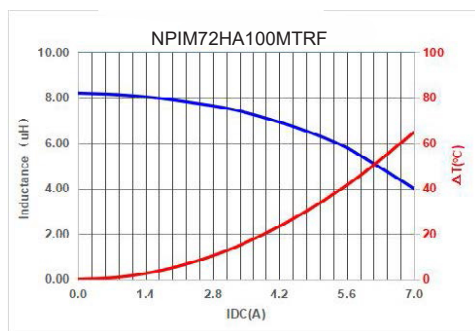
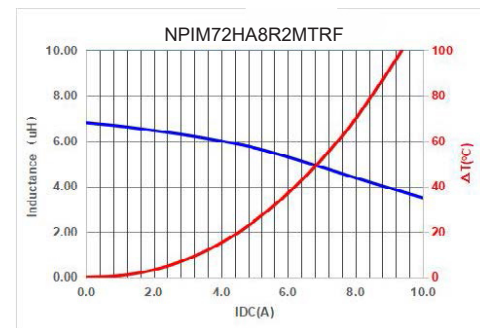
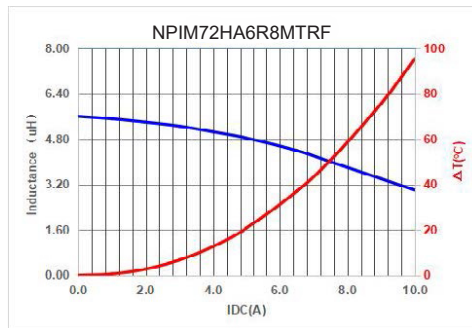
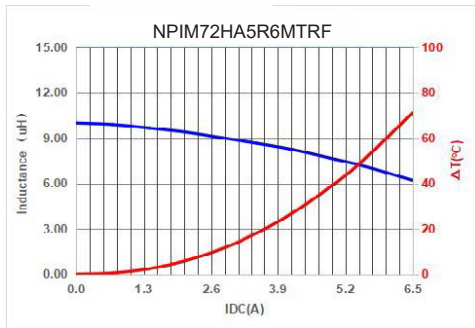


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	Inductance Value (μH) @ 100KHz	Value Tolerance	DC Resistance (Ω) ±20%	DC Current Isat (Amps max.)	DC Current Irms (Amps max.)	Test Frequency
NPIM72HAR20MTRF	0.20	± 20%	0.0019	37.0	21.0	100KHz
NPIM72HAR33MTRF	0.33	± 20%	0.0024	30.0	18.0	
NPIM72HAR47MTRF	0.47	± 20%	0.0042	24.0	16.0	
NPIM72HAR68MTRF	0.68	± 20%	0.0046	21.0	15.0	
NPIM72HA1R0MTRF	1.0	± 20%	0.0068	15.0	13.0	
NPIM72HA1R5MTRF	1.5	± 20%	0.0101	13.0	11.0	
NPIM72HA2R2MTRF	2.2	± 20%	0.0147	11.0	9.0	
NPIM72HA3R3MTRF	3.3	± 20%	0.0276	8.0	7.0	
NPIM72HA4R7MTRF	4.7	± 20%	0.0368	7.0	6.0	
NPIM72HA5R6MTRF	5.6	± 20%	0.0402	6.5	5.5	
NPIM72HA6R8MTRF	6.8	± 20%	0.0506	6.0	5.0	
NPIM72HA8R2MTRF	8.2	± 20%	0.0530	5.5	5.0	
NPIM72HA100MTRF	10	± 20%	0.0736	5.0	4.5	



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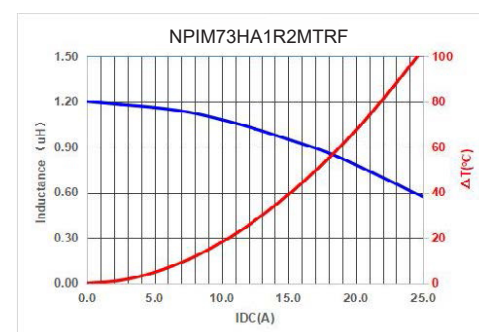
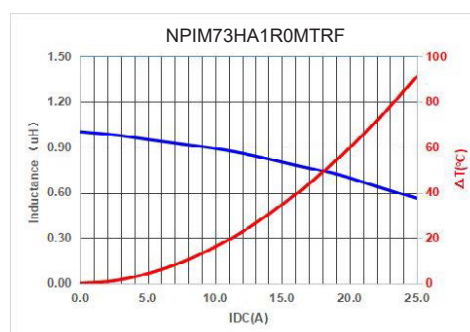
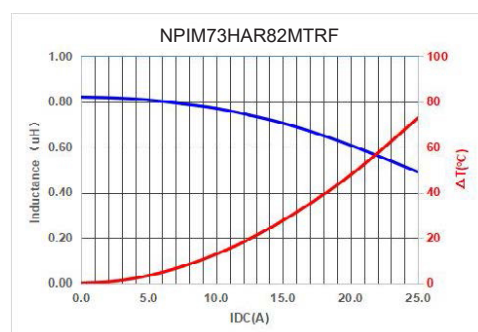
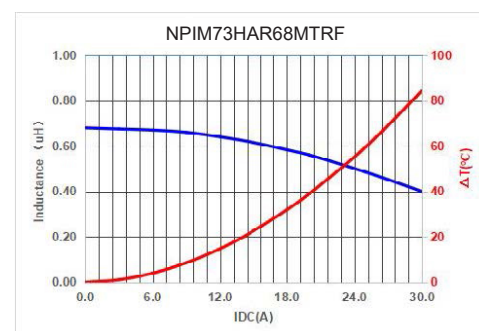
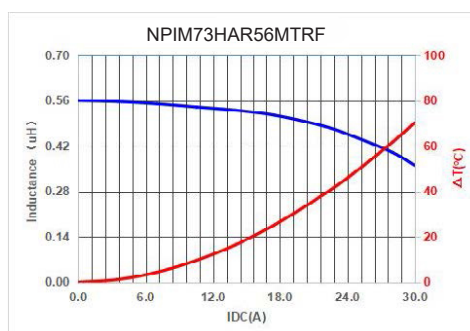
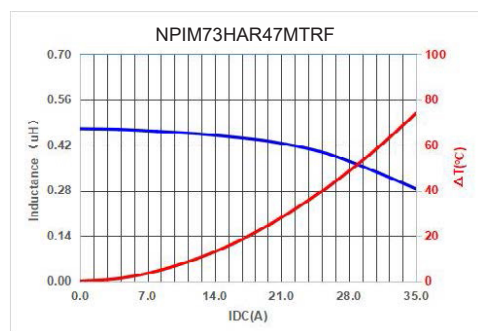
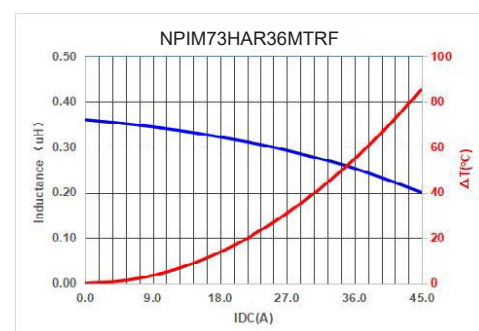
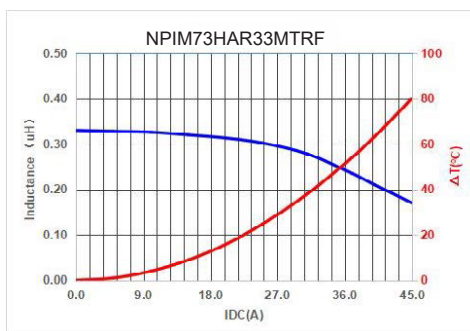
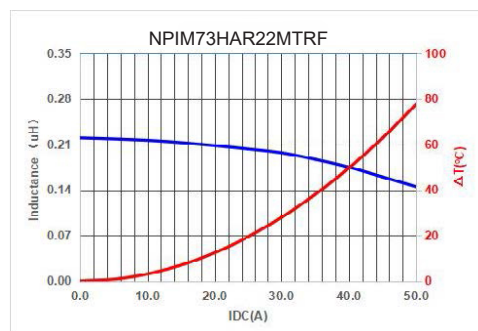


NPIM_HA Series

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Part Number	Standard Values - NPIM73HA Size (7.3 x 6.6 x 2.8mm)					
	Inductance Value (μH) @ 100KHz	Value Tolerance	DC Resistance (Ω) ±20%	DC Current Isat (Amps max.)	DC Current Irms (Amps max.)	Test Frequency
NPIM73HAR22MTRF	0.22	± 20%	0.0018	40.0	31.0	100KHz
NPIM73HAR33MTRF	0.33	± 20%	0.0021	33.0	27.0	
NPIM73HAR36MTRF	0.36	± 20%	0.0025	31.0	26.0	
NPIM73HAR47MTRF	0.47	± 20%	0.0032	28.0	21.0	
NPIM73HAR56MTRF	0.56	± 20%	0.0033	25.0	19.0	
NPIM73HAR68MTRF	0.68	± 20%	0.0040	23.0	17.0	
NPIM73HAR82MTRF	0.82	± 20%	0.0046	19.0	15.5	
NPIM73HA1R0MTRF	1.0	± 20%	0.0053	17.0	14.0	
NPIM73HA1R2MTRF	1.2	± 20%	0.0065	16.0	13.0	
NPIM73HA1R5MTRF	1.5	± 20%	0.0075	13.0	12.0	
NPIM73HA2R2MTRF	2.2	± 20%	0.0094	11.0	10.5	
NPIM73HA3R3MTRF	3.3	± 20%	0.015	9.0	8.5	
NPIM73HA4R7MTRF	4.7	± 20%	0.022	7.0	6.5	
NPIM73HA6R8MTRF	6.8	± 20%	0.038	6.5	5.5	
NPIM73HA8R2MTRF	8.2	± 20%	0.040	5.5	5.0	
NPIM73HA100MTRF	10	± 20%	0.047	5.0	4.8	



Performance Passives By Design

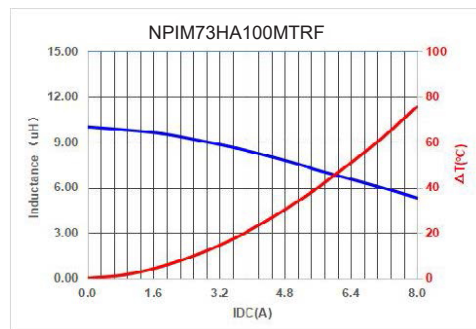
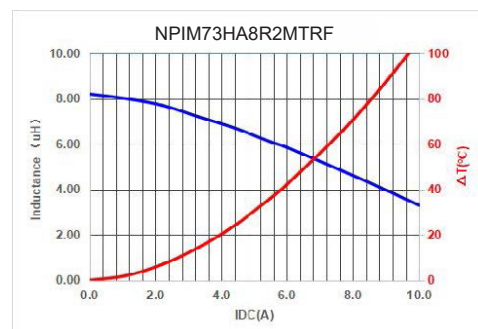
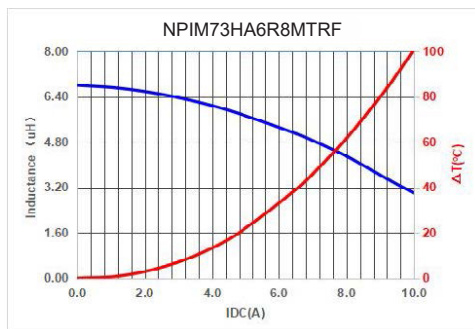
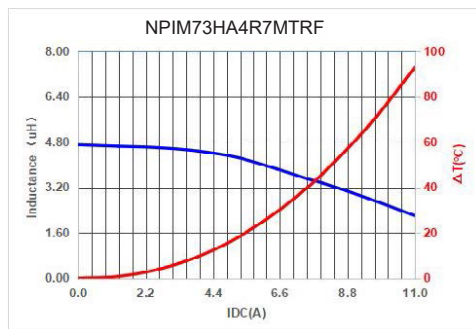
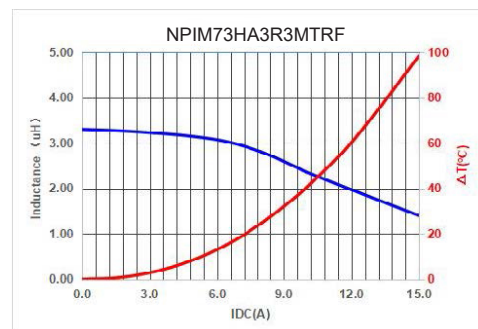
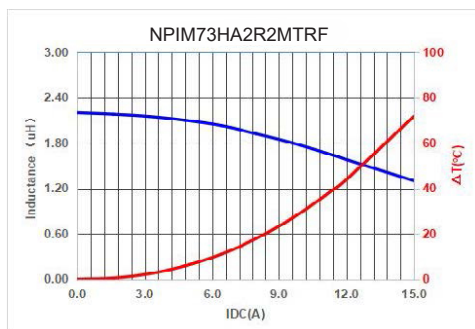
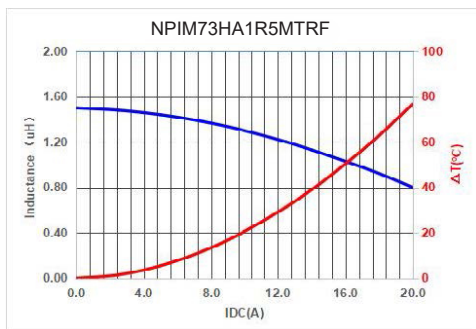
NIC Components Corp.
100 Baylis Road. Melville, NY 11747

Last Updated 10/22/2024. Specification subject to change without notice. Please check web site for latest information.

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NPIM_HA Series

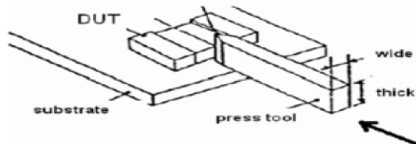
Hot Press Carbonyl Molded Power Inductors



ENVIRONMENTAL CHARACTERISTICS

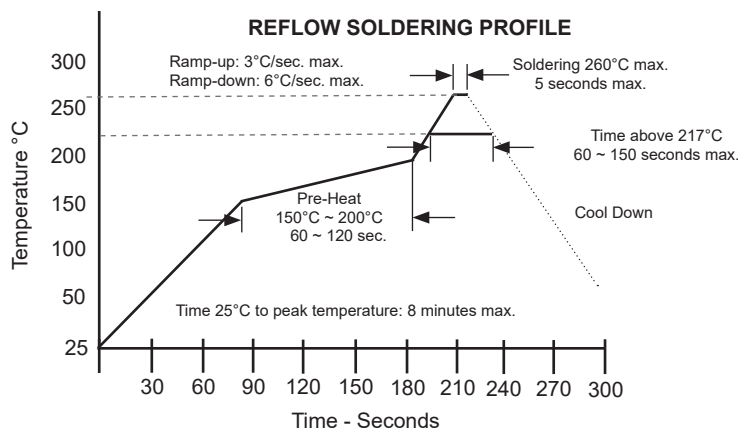
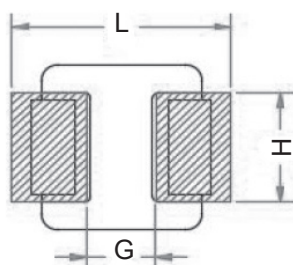
Item	Performance	Test Condition														
Life Test	Appearance: No damage. Inductance: within±10% of initial value Q: Shall not exceed the specification value. RDC: within ±15% of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles) Temperature: 125±2°C Applied current: rated current Duration: 1000 ± 12hrs Measured at room temperature after placing for 24 hrs.														
Load Humidity		Preconditioning: Run through IR reflow for 3times. (IPC/JEDECJ-STD-020E Classification Reflow Profiles) Humidity: 85±2%R.H, Temperature: 85°C±2°C Duration: 1000hrs Min. Bead:with 100% rated current, Inductance: with 100% rated current Measured at room temperature after placing for 24±2 hrs.														
Moisture Resistance		Preconditioning: Run through IR reflow 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles) 1. Baked at 50°C for 25hrs, measured at room temperature after placing for 4 hrs. 2. Raise temperature to 65±2°C 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25°C in 2.5hrs. 3. Raise temperature to 65±2°C 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25°C in 2.5hrs,keep at 25°C for 2 hrs then keep at -10°C for 3 hrs. 4. Keep at 25 °C 80-100%RH for 15min and vibrate at the frequency of 10 to 55 Hz to 10 Hz, measure at room temperature after placing for 1~2 hrs.														
Thermal Shock		Preconditioning: Run through IR reflow 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles) Reflow Profiles Condition for 1 cycle Step1:-40±2°C 30±5min Step2:125±2°C <=0.5min Step3:125±2°C 30±5min Number of cycles: 500 Measured at room temperature after placing for 24±2 hrs.														
Vibration	Appearance: No damage. Inductance: within±10% of initial value Q: Shall not exceed the specification value. RDC: within ±15% of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow for 3 times. (IPC/JEDECJ-STD-020E Classification Reflow Profiles) Oscillation Frequency: 10Hz~2KHz~10Hz for 20 minutes Equipment: Vibration checker Total Amplitude: 10g Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations).														
Bending		Shall be mounted on a FR4 substrate of the following dimensions: >=0805 inch(2012mm):40x100x1.2mm <0805 inch(2012mm):40x100x0.8mm Bending depth: >=0805 inch(2012mm):1.2mm <0805 inch(2012mm):0.8mm duration of 10 sec.														
Shock		<table><tr><td>Type</td><td>Peak value (g's)</td><td>Normal duration (D) (ms)</td><td>Wave form</td><td>Velocity change (Vi)ft/sec</td></tr><tr><td>SMD</td><td>50</td><td>11</td><td>Half-sine</td><td>11.3</td></tr><tr><td>Lead</td><td>50</td><td>11</td><td>Half-sine</td><td>11.3</td></tr></table> 3 Shocks in each direction along 3 perpendicular axes. (18 shocks)	Type	Peak value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (Vi)ft/sec	SMD	50	11	Half-sine	11.3	Lead	50	11	Half-sine
Type	Peak value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (Vi)ft/sec												
SMD	50	11	Half-sine	11.3												
Lead	50	11	Half-sine	11.3												
Solderability	More than 95% of the terminal electrode should be covered with solder	a. Method B1, 4 hrs @155°C dry heat @255°C±5°C Test time:5 +0/-0.5 seconds. b. Method D category 3. (steam aging 8hours ± 15 min)@ 260°C±5°C Test time: 30 +0/-0.5 seconds.														

ENVIRONMENTAL CHARACTERISTICS

Item	Performance	Test Condition								
Resistance to Soldering Heat		Depth: completely cover the termination <table><tr><th>Temperature(°C)</th><th>Time(s)</th><th>Temperature ramp/immersion and emersion rate</th><th>Number of heat cycles</th></tr><tr><td>260 ±5 (solder temp)</td><td>10 ±1</td><td>25mm/s ±6 mm/s</td><td>1</td></tr></table>	Temperature(°C)	Time(s)	Temperature ramp/immersion and emersion rate	Number of heat cycles	260 ±5 (solder temp)	10 ±1	25mm/s ±6 mm/s	1
Temperature(°C)	Time(s)	Temperature ramp/immersion and emersion rate	Number of heat cycles							
260 ±5 (solder temp)	10 ±1	25mm/s ±6 mm/s	1							
Terminal Strength	Appearance: No damage. Inductance: within±10% of initial value Q: Shall not exceed the specification value. RDC: within ±15% of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles) With the component mounted on a PCB with the device to betested, apply a force(>0805:1kg , <=0805:0.3kg)to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also the force shall be applied gradually as not to apply a shock to the component being tested. 								

LAND PATTERN DIMENSIONS (mm)

Case Size	L	G	H
NPIM42HA	5.2	2.2	3.5
NPIM53HA	6.5	2.2	3.5
NPIM72HA	7.7	2.5	3.5
NPIM73HA	7.7	2.5	3.5

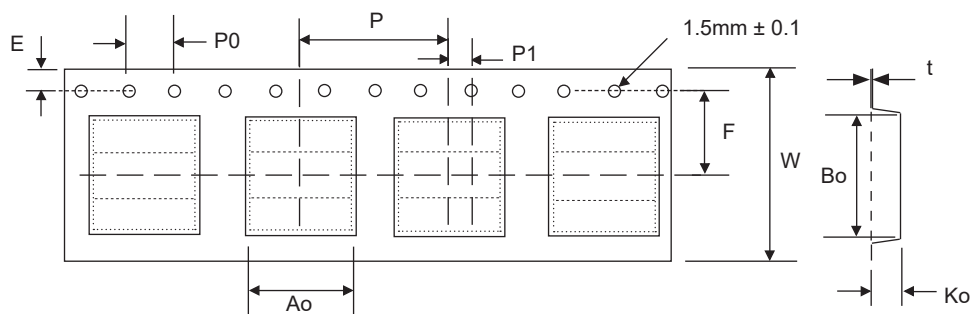


NPIM_HA Series

Hot Press Carbonyl Molded Power Inductors



Case Size	Reel Qty	CARRIER TAPE DIMENSIONS (mm)									
		W	A0	B0	E	F	K0	P	P0	P1	t
NPIM42HA	3,000	12.0±0.3	4.6±0.10	4.9±0.10	1.75±0.10	5.1±0.10	2.3±0.10	8.0±0.10	4.0±0.10	2.0±0.10	0.35±0.05
NPIM53HA	2,000		5.7±0.10	6.5±0.10			3.3±0.10				
NPIM72HA	1,500	16.0±0.3	7.1±0.10	8.1±0.10	7.5±0.10		2.7±0.10	12.0±0.10		4.0±0.10	
NPIM73HA	1,000		4.6±0.10	4.9±0.10			3.2±0.10				



Case Size	Tape Width	REEL DIMENSIONS (mm)			
		A(mm)	B(mm)	C(mm)	D(mm)
NPIM42HA	12.0	12.4 +2.0/-0.0	100 ± 2.0	13.0 +0.5/-0.2	330 ± 0.2
NPIM53HA					
NPIM72HA	16.0	16.4 +2.0/-0.0			
NPIM73HA					

